SERIALISM PANEL (SMT MEETING 2009)[1]

Theories of Histories of Serialism: Terminology, Aesthetics, and Practice in Post-War Europe – as Viewed by Luciano Berio

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The term serialism is commonly used in music theory to designate a compositional method that uses fixed order as its organization principle. The term often refers to the compositional practices of Schoenberg and its adepts, although it was known then as twelve-tone technique. The term *serialism* came later in 1947 when it was introduced by both René Leibowitz in France and Humphrey Searle in England as transliterations of *Zwölftontechnik* and *Reihenmusik* [row music].[2] In 1955, the term *serielle Musik* was used by Herbert Eimert and Karlheinz Stockhausen in *Die Reihe*, although by then it had acquired a broader significance.[3]

This article addresses the problem of the terminology associated with serialism and the use of serialism as practice after 1950.[4] The article is divided into two parts:

[1] The following four articles are selected contributions to a panel presented at the annual meeting of the Society of Music Theory, Montreal 2009.

[2] Both studied with Anton Webern (1983-1945).

[3] The periodic *Die Reihe* was published between the years of 1955-1962 by Universal Editions of Vienna. Both Eimert and Stockhausen served as its editors.

[4] I would like to thank Robert Morris for his suggestions and advice regarding this subject. A short version of this paper was presented at the 2009 SMT conference in Montreal in a Special Session entitled: "Theories and Aesthetics: An Historical Reconsideration of Serialism as Practice." The panel discussion also included papers by Richard Hermann, Bruce Quaglia, and Chris Shultis. Robert Morris presented a formal response to the question posed by the panel.

the first begins by addressing the role of the Darmstadt Summer Courses in the propagation of serialism during post-war Europe and raises a fundamental question regarding the meaning of the word serialism.[5] The second part focuses on Luciano Berio (1925-2003) starting with his aesthetics during the early 1950s and 1960s, and following with an explanation of the ways he used serialism. Berio is particularly relevant to this discussion because he attended Darmstadt for several years and composed using serial procedures.[6]

PART I

Darmstadt: the Embodiment of Serialism?

The Darmstadt International Summer Courses for New Music began in 1946 under the initiative of Wolfgang Steinecke (1910-1961).[7] Until 1970, they took place annually; since 1970, they have continued biannually. Composers, students, and performers gather there to discuss, study, and perform contemporary works. The name "Darmstadt School" is associated with the first fifteen years of its existence."[8] These initial years have been historically known for their devotion to and propagation of serialism, although this assumption is not entirely true. According to Christopher Fox, the first Darmstadt course of 1946 "illustrates both the ambitions of the organisers to begin bridging the gap between the new music of the 1930s and the present and the practical problems that confronted everyone in post-war Germany."[9] It was gradually that the teaching of serialism dominated the attention of those associated with Darmstadt. By 1949, a significant number of works of the Second Viennese School were performed there, not coincidentally because of the participation of Leibowitz from Paris and Peter Stadlen (1910-1996) from London.[10] Furthermore,

[5] From here on, The Darmstadt Summer Courses will be referred only as "Darmstadt."

[6] Berio attended Darmstadt from 1956 to 1963, lecturing there as a guest in 1957, and teaching as regular faculty in 1963. He had several of his major compositions composed and/or premiered there.

[7] Wolfgang Steinecke (1910-61) was a musicologist and director of the Darmstadt Summer Courses from its beginning in 1946 to 1961, when he suddenly died in a car accident.

[8] The name "Darmstadt School" was given by Luigi Nono (1924-1990) in a 1959 lecture.

[9]Christopher Fox, "Music after Zero Hour," in *Contemporary Music Review*, Vol. 26/1 (February 2007), 7.

[10] Leibowitz was a composer and respected teacher. He was responsible for introducing many of the works of the Second Viennese School at the International Festival of Chamber Music that he started in 1947. Stadlen was a composer, pianist, and musicologist. He was responsible for premiering Webern's Variations for piano, Op. 27 in London.

the organizers explicitly desired to rescue Schoenberg by returning him to Germany via an invitation to Darmstadt. Fox comments:

> The courses also made a symbolic alliance with the dodecaphonic cause by taking the opening horn theme from Schoenberg's First Chamber Symphony as the logo for use on all their posters and leaflets. This most public declaration was matched by negotiations with Schoenberg himself, who was invited to return to Europe and make his home in Darmstadt at the city's expense, an offer that foundered in a sea of misunderstandings compounded by Schoenberg's failing health.[11]

Nevertheless, the fame of Darmstadt as the embodiment of serialism may have its origins with the fact that Darmstadt was chosen to be the place where the second International Congress of Dodecaphonic Music took place from July 2-4, 1951 during the (regular) summer course of that year.[12] The congress was separate from the summer festival, as special invitation was extended only to a selected few. The lecturers included Herber Eimert, Hanns Jelinek, Josef Rufer, Ernst Schroeder, and Humphrey Searle. The subjects discussed during the three-day congress included: Herbert Eimert's "Twelve-Tone Style or Twelve-Tone Technique?;" Hanns Jelinek's "Use of Twelve-Tone Row;" an open discussion by Josef Rufer titled "Arnold Schoenberg;" a panel discussion on "Systematic Representation of the Classic Twelve-Tone Technique and its Possibilities;" Willi Reich and Hans Erich Apostel on the music of Alban Berg; Humphrey Searle, Max Deutsch, and Hans-Joachim Koellreutter giving reports about the situation of the twelve-tone music in England, France, and Brazil respectively; and a panel on "Expansions and Possibilities: Mutations [of the system] in the Creative Works of Young Composers."[13] Binaries such as "classic twelve-tone" and "expanded twelve tones" were acknowledged, attesting for an old (the Second Viennese School) and a new practice (the post-war composers). The congress had an aura of elitism, which turned out to be a misfired attempt on the part of the organizers, notwithstanding the fact that Darmstadt itself was already elitist. In addition, based on the choices of subject matters, a certain preoc-

[11] Fox 2007, 10.

[12] In 1949, the first International Congress of Dodecaphonic Music took place in Milan. It was an effort headed by Camillo Togni, Luigi Dallapiccola, and Bruno Maderna. Togni and Maderna were not part of the second congress, and attended Darmstadt in 1951 only as part of the regular summer course.

[13] Although these lectures are catalogued at the Darmstadt Institute for New Music archives, their texts have not been preserved.

cupation with the future of dodecaphonism was evident, as rumors of its decline were already circulating.[14] The congress was never to be repeated.

The fear that dodecaphonism was on the decline was not without reason. In 1953, Ernst Krenek (1900-1991) published an article entitled "Is the Twelve-Tone Technique in Decline?" to answer this exact question.[15] Krenek does not name the critics but answers the question straightforward. He acknowledges that the notion of the decline was widespread, occurring among "the faithful as well as among those who have never been favorably inclined towards this compositional procedure."[16] He says that dodecaphonism was not in decline but instead "it is a more inclusive principle than those who invented it mainly for ordering atonal processes may have assumed."[17] At the end of the article, he proclaims that the root of this criticism is prejudice combined with incapacity to understand the new compositions written in this new more-inclusive style. He says:

> Those who hopefully proclaim that the twelve-tone technique is declining, because they are still bewildered by the majority of works so written, only rationalize the fact that they have not yet overcome their prejudices against unfamiliar stylistic features. The process in which they acquired their prejudices causes them frequently to call themselves "educated" musicians. It is a pity that they were only half educated.[18]

The problem Krenek raises is important because the friction here is in the terminology: he is not actually addressing works written using the twelve-tone method but its radical form known as "total serialism," which came to dominate the lecture-discussions during most of the Darmstadt courses of the 1950s. The first total serialism work presented in Darmstadt was Olivier Messiaen's *Mode de valeurs et d'intensités* for piano (from *Quatre Études de Rhythme*, 1949) which greatly influenced Pierre

[14] The "decline" here may refer to a fear that the practice of serialism would cease to exist. This was directly related to two fact that they were aware of: 1) fewer compositions being produced; and 2) because the compositions produced were considered deviations of the [Schoenberg] normative practice. A later article that addressed the same subject is Iannis Xenakis's "The Crisis of Serial Music" (1955).

[15] Krenek taught and presented works in Darmstadt in the following years: 1946, 1950, 1951, 1954, 1955, 1956, and 1958.

[16] Krenek 1953, 514.

[17] Ibid., 522.

[18] Ibid., 527.

Boulez (b. 1925) and Karlheinz Stockhausen (1928-2007).[19] However, as powerful as total serialism was, it did not survive the end of the decade. Fox again concludes that "[a]nother conventional judgment on the music of this period is that, after flirting dangerously with serialist total predetermination in the early 1950s, composers gradually relaxed, allowing both themselves and their performers more freedoms."[20]

By the end of the 1950s, disputes about the validity of the serial system and other compositional practices became common arguments among composers who attended those courses, leading to a crisis that saw its peak at the historic meeting of 1958. In that year, John Cage (1912-1992) openly challenged the practice of serialism in favor of a freer approach to composition. Cage did not cause the composers of Darmstadt to change, although he did provoke quite a stir at the course in 1958. His claims only validated the fact that even composers belonging to the Darmstadt School did not adhere strictly to one compositional practice but to several. Luciano Berio, Luigi Nono, Iannis Xenakis and others were already engaged in multiple compositional practices. Jeannie Guerrero makes the following comment about Nono's works: "Nono's experimentation with total serialism during his association with the Darmstadt Summer Courses (roughly 1950 to 1960) produced works whose lineage to serialism becomes interwoven with other compositional strands."[21] Such a statement is appropriate not just to Nono, but to several composers of that group as well.

There are not many scholarly works defining serialism of the 1950s/60s, although recent studies have shown a renewed interest on the subject. Some examples include: M. J. Grant's *Serial Music, Serial Aesthetics: Compositional Theory in Post-War Europe* (2001), the articles on Darmstadt that appeared in the 2007 issue of *Contemporary Music Review*, Joseph Straus's "A Revisionist History of Twelve-Tone Serialism in American Music" (2008), Guerrero's 2006 article addressing Nono, and Christoph Neidhöfer's two articles "Bruno Maderna's Serial Arrays" (2007) and "Inside Luciano Berio's Serialism" (forthcoming). M. J. Grant vents the same frustration, as she mentions that "surprisingly few studies have addressed its [serialism's] cultural background; even fewer have explored serialism's place within theories of modern

[19] Babbitt's first attempt at total serialim, *Three Compositions for Piano* (1947), predates Messiaen's work, although Babbitt's works were not performed in Darmstadt until 1964.

[20] Fox 2007, 14.

[21] Jeannie Ma Guerrero, "Serial Intervention in Nono's Ilcanto Sospeso," in *Music* Theory *Online* 12.1 (February 2006).

art as a whole."[22] This preliminary study should be an invitation to look further into this subject and should not be viewed as a prescriptive or proscriptive look at serialism.

Serialism: Many Definitions (A Review of the Literature)

In order to trace the history of serialism from its beginning, we have to start with Schoenberg.[23] This would imply a reference to the history of twelve-tone technique, but may be unnecessary, as several studies of Schoenberg's method and its history already exist.[24] Instead, I would like to address serialism after Schoenberg and clarify that the association of twelve-tone as serialism is a later [later than Schoenberg] assumption. The terminology "serialism" only appears with the post-war composers: it was an outgrowth of the method of serializing twelve-tone pitches. The confusion with the terminology, serialism vs. twelve-tone, is conceptual: serialism is a generic term that embraces several subcategories, among them twelve-tone. Twelve-tone means only the serialization of twelve pitches.

It is also difficult to find consistent definitions of serialism that address the composers of the post-war era. One of the reasons for this inconsistency is that the works of the post-war era are notoriously recalcitrant to casual understanding, which in turn leads to misconstrued and prejudiced assumptions regarding the type of serialism these composers employed. The reason may be either serialism in these post-war works was so vague one could not perceive it without very careful examination or only traces of the system were detectable.

Common definitions of serialism are readily available, and examples could be found in the *Encyclopedia Britannica*; *The Columbia Encyclopedia*, 6th Ed; and *The Concise*

[22] M.J. Grant, Serial Music, Serial Aesthetics: Compositional Theory in Post-War Europe (Cambridge: Cambridge University Press, 2001), 1.

[23] In addition, the contributions and claims to early serialism of Josef Mattias Hauer (1883-1959) cannot be ignored. See: Fürsprache für Hauer—Hermann Heiß und die Hintergründe eines Briefes von Thomas Mann an Ellie Bommersheim im Jahre 1949 [Speech for the defence of Hauer—Hermann Heiß and background of a letter of Mann's with Ellie Bommersheim in 1949]. Papers from a conference held in Lübeck, July 4-5, 1997.

[24] Just to cite a few examples: 1) on the history of twelve-tone: René Leibowitz's Schoenberg and His School (1947); Luigi Rognoni's Espressionismo e dodecafonia (1954); Roman Vlad's Storia della dodecafonia (1958); 2) On the analysis of twelve-tone music: Milton Babbitt's numerous writings including "Since Schoenberg" (1973) and the book Problems of Modern Music (1960); Krenek 's "Is the Twelve-Tone Technique on the Decline?" (1953) and "Extents and Limits of Serial Techniques" (1960); Studies in Counterpoint Based on the Twelve-Tone Technique (1940); Donald Martino's "The Source Set and its Aggregate Formations" (1961);George Perle's Serial Composition and Atonality (1961); George Rochberg's The Hexachord and its Relation to the Twelve-Tone Row (1955); etc.

Oxford Dictionary of Music to cite a few. The fact that these definitions all start with Schoenberg renders them unproductive for the reasons of terminology already mentioned. In addition, at this particular historical moment [1950s], there is no one common-practice type of serialism, but instead multiple uses of the system applied to parameters other than just pitch. In 1961, Ann Basart said: "To my knowledge, no one has yet written a textbook treating post-Webern serial techniques; all of the above [cited in her bibliography] are concerned only with 'classical' twelve-tone writing."[25] This is not a fault of the people commenting on the method; on the contrary, the problem is the lack of a single methodology present in the works of the post-war, thus causing confusion and misunderstanding to the willing analyst.

One of the first definitions of the term "serialism" post 1950 comes from Paul Gredinger in *Die Reihe*. According to him, serialism embraces a philosophy more than a compositional technique. He says:

> Our word serial means rule: a rule generating proportions, a rule of time, the life-rule of our music. This expands into a type of world view, when by world we mean the musical world; view here means the measure, the material, the structure and texture of music. Our series is a measuring system of its own preordained order; it is expanded and selected on the basis of a systematic sequence of elementary quanta (greater or lesser excerpts from the whole range of the statistical spectrum, from the sine tone to white noise); it is the rule of a first relationship, which in turn creates the apparent form of the work's structure. The serial principle creates structures which in their totality as in their components relate to a single row character.[26]

No clear definitive and succinct definition of serialism is possible as Grant has pointed out. Instead, she posits:

> Serial music is integrative, in the sense that it deals with differences in such a way that the individual characters are maintained while at the same time a unity is achieved… Serial music, unlikely thematic music, is not defined by foreseeability; it is surprising, unforeseeable; it is not closed, but open. Aesthetic rather than semantic; statistic. Serial music strives for equilibrium, and attains almost perfect balance – 'almost' since, as Klee

[25] Ann P. Basart, "The Current State of Writings on Serial Music" in *Notes*, Second Series, Vol. 18/3 (Jun., 1961), 400.

[26] Paul Gredinger, „Das Serielle" in: *Die Reihe* I (1955), 38.

> pointed out, it is the process that is more important than the attainment of form, the way that is more important than the goal.[27]

By citing Umberto Eco, Grant relates serialism with structure stressing process over final product:

> The main goal of serial thought is to allow codes to evolve historically and to discover new ones, rather than to trace them back to the original generative Code (the structure). Thus, serial thought aims at the production of history and not at the rediscovery, beneath history, of the *atemporal abscissae* of all possible communication. In other words, the aim of structural thought is to *discover*, whereas that of serial thought is to *produce*.[28]

Rudolf Frisius, a Stockhausen scholar, mentions the difficulty in addressing the term due to its constant change in meaning and to its self-referentiality. According to him, the term is dependent upon language, the composer who is using it, and the work itself. He says:

> The term "serial Music" (*serielle Musik*) is one of the most difficult terms in the context of the history of composition and theory in 20th century music. The term can be used differently according to the language (e.g. sériel, serial, serially) and it underwent essential transformations by translating it from French into German. The meaning of this term is controversial – depending in which context of the history of composition and on the work of a particular composer, it is primarily referring to. The term is used shortly before 1950 but its radical meaning came shortly after 1950… Since the 1950s, there has been a change in the larger development connections of the term, which justifies the changing of its meaning.[29]

In addition, Christopher Fox concludes his article on Darmstadt with the interesting remark that it is not possible to confine serialism or the composers of the time. He says: "People often talk about the music of the early 1950s as a sort of glass bead

[27] Grant 2001, 164.

[28] Ibid., 213.

[29] Rudolf Frisius, "Serielle Musik A. Zur Terminologie im kompositionsgeschichtlichen Wandel," in *Die Musik in Geschichte und Gegenwart: allgemeine Enzyklopädie der Musik*. New York: Metzler, 1998; Also http://www.frisius.de/rudolf/texte/tx318.htm, Accessed 9/14/2009; Translation mine; Frisius mentions the "lost in translation" problem of the term *serial* from French to German: this seems to be a reverse of fortune, since the first term to appear in France was "twelve-tone" already as a translation of the German *Zwölftontechnik*.

game with notes, hermetically sealed from the real world; by the late 1950s things are supposed somehow to have become more open."[30]

In 1961, Peter Evans began his keynote address to the Royal Musical Association's 88th session with the following words: "[u]ntil a few years ago, my title ["Compromises with Serialism"] could have stood without any need for further clarification: *serialism*, however mistrustfully it might be received in precept or example, was clearly understood to be that method of pitch relationship devised by Schoenberg."[31] Evans nostalgically discusses how Schoenberg was the "seed" that gave birth to two generations of compositional thought. He comments: "Schoenberg's thought fertilized that of many who were unwilling or incapable of following him all the way, not to mention all those who joined in a disrespectful stampede over his grave while profiteering from his legacy."[32] In this address, Evans identifies thirteen different ways in which serialism was used (or misused) by composers of the post-war generation, pointing out several "compromises." The compromises Evans talks about entailed a broader application of the system by either over or under-using it. They are: 1) series relegated to the background; 2) endless use of rotation (as in Britten's music); 3) pitch permutation; 4) non-serial texture; 5) rotation; 6) fewer than 12 pitches; 7) more than 12 pitches; 8) serialism in some portion of the work; 9) serial and non-serial combined as motivic development; 10) more than one row at a time; 11) contrived procedures to allude to tonality; 12) uncommitted tonal allusions; and 13) orthodox harmony punctiliously ordered (or multi-tonality). In order to eliminate redundancy, I summarize Evans's categories as follows: 1) series relegated to the background; 2) rotation; 3) pitch permutation; 4) series with more or less than 12 notes; 5) series within tonal contexts (either as a motive or to allude to tonality); 6) more than one row at a time; and 7) non-pervasive (serialism at some portion of the work). In a sense, Evans sees these categories as some kind of corrupted forms of serialism or as disrespectful tributes to Schoenberg.

Although it is common to associate Schoenberg and his students with serialism, this association (serialism à la Schoenberg) accounts only for a small number of composers who employed the technique. The scholarship (particularly in America) tends to address Schoenberg's serialism in its strictest form, covering an array of relationships that could only be possible in composition if a strict form of serialism

[30] Fox 2007, 14.

[31] Peter Evans, "Compromises with Serialism," in *Journal of the Royal Music Association*, No. 88 (1961), 1.

[32] Ibid., 4.

is employed. Andrew Mead assessed serialism scholarship in 1989 by saying that "the study of twelve-tone and atonal music is a young discipline, because its subject, as music history goes, is a very recent arrival upon the scene."[33] He also acknowledges Schoenberg and Babbitt as the "brightest light of the twelve-tone firmament" (Mead 1989, 40). In his short article, Mead addresses four areas of concern: musical surface, taxonomy of pitch-class collections, syntaxes of twelve-tone and atonal music, and fundamental interpretations of perceptual distinctions underlying twelve-tone and atonal contexts. He identifies major areas of research addressing serialism and provides a bibliography of 110 articles. Most of the articles in Mead's compendium either relate to the music of Schoenberg (and his pupils), as well as Stravinsky and Bartók, or discuss theoretical issues associated with the tight relationships that the strict use of the system affords. Among the 110 articles, only 11 discuss the music of post-war composers.[34] Important books, such as Allen Forte's *The Structure of Atonal Music*, George Perle's *Serial Composition and Atonality,* and Straus's *Introduction to Post-Tonal Theory* address serialism from the perspective of fixed order, which allows tight relationships brought by a 12-tone ordering subject to transformations.[35] More recently, Allan Moore has re-launched the debate on serialism.[36] He makes a distinction between Babbitt's twelve-tone music (and its serial attributes) and "serial or free twelve-tone music."[37] He also agrees with Martha Hyde's assumption that there is confusion between "twelve-tone technique" and "twelve-tone method."[38] Moore defines serialism "with reference to the constructive role of pitch-class ordering [without reference to their quantity] with the attendant, pitch-class permutating operations of transposition, inversion, retrogression, conceivably rotation… but not "free" permutation, at least not at a level at which a piece is 'serial'."[39] He defines twelve-tone music as the one that "requires… the aggregate (i.e. non-repeating collection of twelve pitch-classes) that is subject to ordering" (ibid). Moore later acknowledges that European composers use the system in a different way and they "have tended to view … [serial] as a far less important constituent of their methods

[33] Andrew Mead, "The State of Research in Twelve-Tone and Atonal Theory, in" *Music Theory Spectrum*, Vol. 11/1 (April 1989), 40.

[34] One article each is listed for the music of Dallapiccola, Hindemith, Martino, Stockhausen, Wolpe, and Xenakis. Carter receives two and Varèse three mentions.

[35] In the third edition of Straus's, there is a short discussion of Boulez and multiplication.

[36] Allan Moore, "Serialism and Its Contradiction," in *International Review of the Aesthetics and Sociology of Music*, Vol. 26/1 (June, 1995), 77-95.

[37] Ibid., 81.

[38] Ibid., 79.

[39] Ibid., 80.

than has Babbitt [with regards to the aggregate]."[40] According to Moore, there are four different types of serialism: 1) serialism as a particular ordering of a collection of pitch classes, without reference to quantities; 2) twelve-tone method as equal to the aggregate and its transformations; 3) free twelve-tone music or the use of the total chromatic without a rigid rule; and 4) serialism where the initial ordering is maintained but is subject to permutation.

As we can observe from Evans in 1961 to Moore in 1995, serialism does not have one single meaning and it has been encumbered with confusion. The need to clarify this issue is an important one because it is necessary to develop an unbiased way to address serialism practiced by composers that do not adhere (or adhere only in part) to strict serialism, particularly those composers of the post-war era. It is also essential to develop an analytical approach to the works of the post-war Europe and establish some theoretical tools that will allow analysis to reveal conclusions that do not reprimand composers for using the system the way they did. Particularly in the 1950s, serialism was something much broader than what the "Schoenberg dictum" prescribed.[41] Combined with some prejudice from earlier critics (such as Evans, Moore, and Mead), the composers of the post-war generation were mislabeled as aleatoric or experimental (or in Evans's terms "unwilling or incapable").[42]

A more flexible approach to the system allowed composers to escape the stigma of serialism as automation, but at the same time, it created a greater number of misunderstandings. The warning against serialism as automation was preached by several people including Krenek and Boulez. Krenek in his "Is the Twelve-Tone Technique on the Decline?" says: "the precious metal forged by the master and his disciples is being turned into small change becoming worthless in the hands of musicians who appropriate the easily graspable mechanics of the technique for purposes that could as well be pursued without its aid."[43] Boulez's warnings will be discussed shortly, in Part II.

[40] Ibid., 81.

[41] Schoenberg dictum: "no tone is repeated within the series and … it [the series] uses all twelve notes of the chromatic scale" (Schoenberg 1941, 218). Other compositional practices may have included Hindemith's new tonality (1949), Nadia Boulanger's neo classicism, electronic music, etc.

[42] As quoted before from Evans's keynote address: "Schoenberg's thought fertilized that of many who were unwilling or incapable of following him all the way, not to mention all those who joined in a disrespectful stampede over his grave while profiteering from his legacy" (Evans 1961-62, 4).

[43] Krenek 1953, 514.

I will refrain from calling the music of post-war composers "twelve-tone composition." Instead, throughout this work, I use the generic term "serialism," meaning the broader, more flexible approach to the system. If there were one definition of serialism in the 1950s, it would read something as proposed below:

> An ordering system subject to transformation and permutation that does not only refer to pitch-class order and directed intervals between pitch classes, but also may generate any musical parameter: rhythm, timbre, dynamics, form of attack, sound blocks, groups of instruments, and even space. The serialized material can appear throughout an entire composition or just in selected parts of it. The degree of similarity between statements may vary widely, forming a constellation of possibilities.[44]

Although I claim this definition as mine, this definition is the product of collaboration. This very broad definition agrees with the concept of "the new aesthetics" promoted by the young generation that attended the second congress of dodecaphonic music in 1951 and thereafter.

PART II

Berio's Aesthetics

Berio came out of the Darmstadt experience deeply affected by serialism's new aesthetics and by the influences of the charismatic figures that regularly attended Darmstadt during the decade of the 1950s, among them Pierre Boulez, Henri Pousseur, John Cage, Theodor Adorno, and several others.[45] I will begin here by examining the main influences on Berio's aesthetics.

[44] I would like to thank Robert Morris and my UNCG colleagues, Guy Capuzzo and Adam Ricci, for helping me to clarify the language.

[45] Adorno (1903-1969) taught at Darmstadt the following years: 1950, 1951, 1954, 1955, 1956, 1957, 1961, and 1966. He wrote more than twenty books, including *Philosophy of Modern Music* (1948), *Negative Dialectics* (1966), and *Aesthetic Theory* (1970). Adorno was critical of the academicism of Darmstadt, nonetheless, he lectured there on philosophy and aesthetics, was one the composition instructors, and had several of his works premiered and/or performed there. For more on Adorno and Darmstadt, please refer to Christopher Shultis "*Faux Amis*: Cage, Boulez, Adorno" presented at the 2009 SMT conference in Montreal and Lydia Goehr 2008, which discusses Adorno's writings on Darmstadt composers.

The writings of Boulez were most influential in shaping Berio's aesthetics, having direct applications to Berio's compositional practice.[46] In 1951, Boulez wrote "Bach's Moment," commenting that instead of embracing new paths, composers opted for familiar procedures for reasons of public acclaim or to avoid confrontation. Schoenberg was a "phony," Stravinsky was a farce, and Ravel an imitator.[47] According to Boulez, these composers submitted themselves to easily grasped traditional or formulaic compositional methods and therefore received no consideration from him. Webern, the composer Boulez admired the most, was not immune to his attacks:[48]

> Besides the technical legacy Webern leaves us, we have also…to take into account his demonic urge to establish a musical order which would continually be called in question, something of which neither the 'classicizing' disciples of dodecaphony nor the 'neo-classicists' seem aware. I may be excused for expressing myself so discordantly: these two tendencies, both inspired purely by the love of comfort, hardly deserve anything more friendly.[49]

Boulez's most famous article, "Schoenberg is Dead" proposes a radical rupture with the past and the embracing of a new aesthetic for the young generation. Boulez despised the idea of neo-classicism and could not conceive why an entire new genera-

[46] Boulez's writings are collected in: Pierre Boulez, *Stocktakings from an Apprenticeship*, collected and presented by Paule Thévenin, translated from French by Stephen Walsh, with an introduction by Robert Piencikowski (Oxford: Clarendon Press, 1991). The most discussed articles include: "Proposals" (1948), "The Current Impact of Berg" (1948), "Trajectories: Ravel, Stravinsky, Schoenberg" (1949), "Bach's Moment" (1951), "Stravinsky Remains" (written in 1951, published in 1953), "Possibly…" (1952), "Schoenberg is Dead" (1952), "Current Investigations" (1954), "Near and Far" (1954), "At the Edge of Fertile Land" (1955), and "Corruption in the Senses" (1956).

[47] These three composers are mentioned in Boulez's 1949 article "Trajectories." Boulez compares two works by Ravel and Stravinsky respectively that bear some relationship to Schoenberg's *Pierrot Lunaire*. The direct attacks on Schoenberg appear in "Trajectories" as well as the famous 1952 article "Schoenberg is Dead."

[48] To Henry Pousseur, the new sensibility of the music of the post-war era was the one influenced by Webern. He says: "The post-Webern music tradition, contrary to the whole production of contemporary music that takes place there, is free from classic ideology. This is why the only reason why it seems strange and difficult to approach it is that it requires a true transformation of a cultivated sensibility, before it can give out its own rich and unimaginable wealth. (Pousseur 2009, 61) [Translation mine.]

[49] Pierre Boulez, *Orientations: Collected Writings*, presented by Paule Thévenin, trans. Stephen Walsh (Oxford: Clarendon Press, 1991), 188.

tion of composers would not see the necessity and the true modernity of the twelve-tone method. However, worse than the neo-classicist composers were the twelve-tone composers who embraced the twelve-tone system but still held on to nineteenth-century procedures. He said: "'dodecaphonic classicism' is unthinkable and bears, in its incoherence, the seeds of its own failures."[50] In the same year, 1952, he wrote "Possibly...," as an attempt to define total serialism (although this will be systematically done only in 1961 with *Music Today*). There, he does not explain what "composition" is, but he surely makes clear what composition is not: it is not juxtaposition, repetition, terraced superimposition, nor a recycling of nineteenth-century aesthetics. He also said that he refused to describe composition in order not to confuse creativity with mechanical procedures. He does explain some aspect of total serialism, such as the serialization of pitch, rhythm, form of attack, and timbre. In his 1954 "Current Investigations," Boulez said: "Music has a duty to discover a new way of distributing the developments of a work without falling back on the formal concepts and 'architecture' of the past… The resounding failures of neo-classicism have been too brutal a warning for us to be tempted to embark in such an absurdity again."[51] Boulez perceived the new music crisis as a psychological drama played by composers who were unable or afraid to let go of the influences of the past or who were simply ignorant.

In 1961, Boulez wrote *Music Today*, a book dedicated to the understanding of the music of his time. This book was conceived during Boulez's years in Darmstadt and directed for the students of Darmstadt.[52] After long and detailed explanations on musical technique (particularly total serialism), he writes near the end of the book:

> We end our investigation of technique itself on the threshold of form. We have proceeded from the definition of the series to its description and its use; then we studied the sound world to which serial functions are applied; in short, we sketched out a morphology. From there, we passed to the outline of a syntax, studying the extrinsic and intrinsic characterology of structures. All the same, it must be remembered that the real work of *composition* begins here, at a point where it is often thought that only appli-

[50] Pierre Boulez, *Stocktakings from an Apprenticeship*, collected and presented by Paule Thévenin, trans. Stephen Walsh (Oxford: Clarendon Press, 1991), 11.

[51] Boulez 1991, 18.

[52] The book was only published in 1963. It was delayed because of the premature death of Wolfgang Steineicke in December of 1961.

> cations have still to be discovered; all these methods must be given a *meaning*.[53]

Here Boulez warns against mechanical procedures associated with serialism. According to Boulez, serialism served an important purpose but it was never to be considered the final product: it was only a means to an end. Composition had to entail creativity and could not be subservient to any structural system: even one considered as sophisticated and highly complex as serialism.

Berio has attested in his interviews that he was deeply affected by Boulez's writings. However, in 1965, it was Berio who was invited to write the entry on serial music for the *Harvard Music Dictionary*. The project, which would be completed only a year later, was not undertaken by Berio but by Henri Pousseur (1929-2009). Berio requested to be responsible only for the English translation of other (less problematic) dictionary entries. After Boulez, Pousseur was the one from the Darmstadt group who produced the most theoretical writings. In 1957, he wrote "La nouvelle sensibilité musicale," the subject matter that had been intended for Berio. Berio worked closely with Pousseur for the ideas and conception of this writing, because this article was first published in Italian, in Berio's own *Incontri Musicali* of 1958.[54] In this article, Pousseur discusses the evolutive process of serial thinking, which brings about a new way of listening. He proposes that there is some kind of friction between the traditional way of hearing and the one proposed by serial music. According to Pousseur, traditional hearing is a one-dimensional act, while the new serial aesthetics requires a multi-dimensional approach. This idea was very closely related to what Berio had proposed in his first article of *Incontri Musicali* titled "Aspetti di artigianato formale" [Aspects of Formal Craft]. There he says:

> In the discovery of a discontinuity of relationships, of a gap between perception and memory, resides the new formal dialectics of music: the rea-

[53] Boulez, in: *Music Today* (1963), 142.

[54] Pousseur and Berio remained close friends as their correspondence attests. The correspondence Berio/Pousseur is archived at the Paul Sacher Stiftung. The first issue of *Incontri Musicali* was published in December of 1956 and contains articles by Henri Pousseur, Roberto Leydi, Ernst Krenek , Luciano Berio, Karlheinz Stockhausen, and Pietro Righini; the second journal was published in May of 1958 and contains articles by Henri Pousseur, Pietro Santi, Alfredo Lietti, and Luciano Berio; the third one was published in August of 1959, with articles by Pierre Boulez, Heinz-Klaus Metzger, Umberto Eco, Nicolas Ruwet, Henri Pousseur, André Souris, Luciano Berio, Niccollò Castiglioni, John Cage, and Alfredo Lietti; the final one, published in 1960 does not contain an article by Berio. The authors of the 1960 journal are: Enzo Paci, Henri Pousseur, Fritz Winckel, Umberto Eco, Fedele D'Amico, Paolo Castaldi, Karlheinz Stockhausen, Alfredo Lietti, André Boucourechliev, and Niccollò Castiglioni. All translations of *Incontri Musicali* are mine.

> son for this discontinuity changes in time the understanding of the same unity of reference of the work and the reactions to the mnemonic connections that establish the temporary meaning of music (which is always and only what seems to be there every instant).[55]

This idea of "discontinuity" or disorientation appears in Berio's writings and compositions of the time. This approach is based on the extra musical influences that were as important to him as the theoretical writings he developed in Darmstadt or elsewhere. The ideas may have something to do with the fact Berio befriended the most notable and important thinkers of the time, and they included: the philosophers Edoardo Sanguineti (b. 1930), Umberto Eco, and Italo Calvino (1923-1985).

The collaboration between Berio and Sanguineti is well known. Berio wrote *Laborintus* 2 based on the homonymous 1956 publication of Sanguineti, his friend and Dante scholar. Berio's interest in Sanguineti stands out because Sanguineti was an important eclectic figure of the time who had connections with a group named the "Nuclear Painters." Departing from the idea of *Spazialismo* [spatiality], Sanguineti along with Enrico Baj (1924-2003) and Sergio Dangelo (b. 1932) published in Milan in 1951 the "Technical Manifesto of Nuclear Painting." Briefly, the Manifesto says that the "Nuclears" would like to destroy all forms of "isms" in painting, particularly those which fell in academicism, by reinventing painting. When Gianni Dova, Gianni Bertini, and Mario Colucci were added to the group, more emphasis was given to an intuitive vision where matter is transformed in energy and motion, and art is not contemplative but dynamic.

The relationship between Berio and Sanguineti is situated at the center of the cultural transformations of post-war Italy since both were interested in radical political views at that time. Sanguineti's poetry reflected a fragmented world, "with images of today, of stereotyped sentiments, with harsh and bitter shapes, ironic invention, parody and quotations that... reverberate in a sort of echo chamber, where the every- day and the universal, the banal and the speculative, the private and the political fuse together into a rigorous and sometimes implacable construction."[56] Sanguineti was acquainted with the work of Berio starting in 1961, but Berio had already read Sanguineti poems from the early 1950s. The collaboration between the two lasted for nearly 40 years, resulting in three major works that Berio produced.[57] Flo-

[55] Berio, "Aspetti di artigianato formale" in: *Incontri Musicali* (1956), 65.

[56] Meirion Bowen, "Luciano Berio," http://www.meirion-bowen.com/mbartberio.htm (Accessed 8/31/2009); According to Bowen, these are Berio's words; however, no source is given.

[57] The other two are: *A-Ronne* (a "Documentary" for eight singers after a poem by Sanguineti, 1974-75) and *Canticum novissimi testamenti* (Ballad for four clarinets, saxophone quartet and eight voices, 1989).

rian Mussgnug argues that the influence of music/literature was mutual: literature and poets influenced musicians as much as musicians infuenced them at that time:

> As I hope to show in this contribution, serialism, electronic music, and especially Berio's experiments with the human voice were important sources of inspiration for some of Italy's most original and distinguished contemporary writers. From the mid-1950s, poets such as Edoardo Sanguineti, Alfredo Giuliani and Nanni Balestrini looked with great interest to the immediate postwar period and to its radical, explosive transformation of modern music, finding there a standard of uncompromising originality and artistic bravery, whose influence can be felt in many of their subsequent declarations regarding the subversive power of poetry.[58]

In *Laborintus 2*, Berio explores sounds, phrasings, and vocal effects, which have allowed him to venture further into new approaches to vocal techniques that were daring and considered almost impossible to perform. In *A-Ronne*, Berio's setting of Sanguineti's words is spread in fragments among actor-singers and includes many repeated words. Berio has defined the work as a "documentary." Musically speaking, his writing is also fragmented as he applied these literary techniques to musical by manipulating the serial system in such a way as to deny its intrinsic characteristics, somehow reinventing it as a freer, more maleable system that could be used as a whole or in part. Mussgnug acknowledges Sanguineti's influence along side with Boulez and Cage and brings to the discussion the philosopher and literary critic Eco:

> Like their musical precursors in Paris and New York – Pierre Boulez and John Cage – Sanguineti and his peers saw themselves as heirs to the cultural wealth of earlier European avant-garde movements, but also as members of a new generation, untarnished by the compromises that had been forced on many artists during the years of dictatorship and war. Italian experimental literature, like modern music, prided itself on its sense of freshness, exhibited confidence and iconoclastic zeal, and took delight in what Luciano Berio called the 'liberating effect' and the 'sacrificial and somehow clownish impulse' of avant-garde culture. Optimism and the demand for a radical renewal of the arts were also at the heart of Umberto

[58] Florian Mussgnug, "Writing Like Music: Luciano Berio, Umberto Eco and the New Avant-Garde," in *Comparative Critical Studies*, Vol. 5 (2008), 81.

> Eco's influential study *Opera aperta* (1962), a book that was soon adopted by Italy's *neoavanguardia* as its unofficial manifesto.[59]

I have already discussed Eco's influence in the works of Berio in a 2007 article but a few clarifications about Eco's influence are here relevant.[60] It was particularly the idea of open form (that first appeared in the third issue of *Incontri Musicali* of 1959) that shaped Berio's compositional aesthetics.[61] In the 1959 article, and later developed in a book entitled *Opera aperta*, Eco identifies in current works a freedom of execution that respects the sensibility and indications of composers and at the same time intervenes in the structure of the works as if this intervention was an improvisatory act (when it is not). He cites Stockhausen's *Klavierstuck XI* and Berio's *Sequenza I* for solo flute as examples. Eco emphasizes that the "open" work cannot be misunderstood as a new dialect of the work or the interpreter, but a way in which an author organizes a series of effects in order that the listener would be able to understand the original idea of the composition. According to Eco, listeners filter the work through their own cultural bias, prejudices, tastes, and inclinations, but the work in its essence, remains the same. The idea of engaging the listener in some type of completion of the composition had already appeared in Berio's 1956 *Incontri* article "Aspetti di Artegianato Formale." The composition would serve as a dialogue between composer and listener. Structure had to be kept out of the surface of the work (it could not be easily or readily recognized, otherwise the work would be "closed" as in the past), but structural devices were important because they held the work together as a scaffold, where moments of freedom alternate between structural pillars. Musically speaking, serialism was, at that historical moment, the structural device that was able to maintain the piece's structural pillars.

Berio had an affinity with the works of Samuel Beckett (1906 – 1989) and Calvino. Becket, an Irish writer, dramatist and poet, was a friend and assistant of James Joyce and one of the important writers of the "Theater of the Absurd."[62] In *Sinfonia*, Berio makes direct references to Beckett and uses some of the devices of the Theater of the Absurd: a conscious attempt at incomprehensibility and meaningless repe-

[59] Ibid., 82.

[60] In the 2007 article, I also discuss the importance of James Joyce (1882-1941) as a literary influence in several of Berio's works.

[61] Eco's article is titled "L'opera in movimento e la coscienza dell'epoca" [The work in movement and the era's conscience].

[62] The "Theater of the Absurd" is a post-war artistic form. It departed from the philosophy of Albert Camus that life is inherently meaningless. The plays in the Theater of the Absurd share some common traits: comedy mixed with tragedy, cliché dialogues, nonsense, absurd plots, repetitive actions, etc.

titions.[63] Calvino, an Italian journalist and writer, wrote the libretto for the opera *Un re in ascolto* (premiered in 1989). At the time of his death, he was the most-translated contemporary Italian writer.[64]

Berio's Serial Practice

Berio learned serialism after graduating from the Milan conservatory. He used it more consistently from 1951 to 1954 and more freely after 1954.[65] He embraced the system half-heartedly although he never rejected it. However, in all of his writings and interviews from 1967 to the late 1980s, he explicitly tried to dissociate himself from the idea of serial procedures. Nonetheless, he did use serialism throughout his career, although his approach to the system was more often than not concealed.[66] The presence serialism in Berio's works has been concealed because of statements in one of his most famous articles, "Meditations on a Twelve-Tone Horse," (1968). There he said:

> Any attempt to codify musical reality into a kind of imitation grammar (I refer mainly to the efforts associated with the twelve-tone system) is a brand of fetishism which shares with fascism and racism the tendency to

[63] For a discussion on Berio's *Sinfonia,* see Losada 2009.

[64] Other influences on Berio include: Noam Chomsky (b. 1928), an American linguist, philosopher, cognitive scientist, political activist, and author, is a professor emeritus of linguistics at MIT. Since the 1960s, he has become known more widely as a political dissident, an anarchist and a libertarian socialist intellectual. Claude Lévi-Strauss (1908-2009), French anthropologist and social theorist, was a major influence on Berio from the late 1960s to the end of Berio's life. Berio quotes Lévi-Strauss's *Lê cru lê cuit* in *Sinfonia*. Bruce Quaglia, in his forthcoming 2009 Ashgate article, explores a possible relationship between the influence of Berio in Gilles Deleuze (1925-1995).

[65] The works from 1951 to 1954 are more blatantly serial. They are: *Deus meus* for voice and three instruments (1951); *Due pezzi* for violin and piano (1951); *Study* for string quartet (1952); *Cinque variazione* for piano (1953; revised 1966); *Chamber Music* for female voice accompanied by clarinet, cello, and harp (1953); *Nones* for orchestra (1954). Sketches showing serial procedures for *Due Pezzi* and *Nones* are preserved at the Paul Sacher Foundation. *Nones* has also been the subject of study of several scholarly articles. Its series appears in Whittall 2008, 195.

[66] The type of serial arrangement he came to favor exemplifies several techniques used by composers of the same generation. An example of this practice occurs in some of the works of Nono. Although Berio and Nono did not get along, Nono, who also attended Darmstadt, perceived the system as flexible. Jeannie Guerrero cites an early letter dating from July 27, 1932 where Nono states: "You are talking about using the series rigidly; I'm speaking instead of using the series with liberal fantasy. Bruno [Maderna] and I used to be perfectly convinced of this necessity. (Guerrero, 2006).

> reduce live processes to immobile, labeled objects, the tendency to deal with formalities rather than substances.[67]

After such a statement who would think of "resurrecting the horse?" Despite it, Berio is not rejecting serialism altogether; instead, I believe his objection is against the methodical use of the twelve-tone-system alone. Later in an undated text, Berio confirms this position by saying the following: "If I voiced against serialism it was simply against the well known numerological manipulation of pitches, timbres, durations, and dynamic marks."[68]

Berio's use of the system is not mechanical at all, but rather veiled; he chooses his rows carefully, which often allow for interesting possibilities. However, as skillfully as he composes his rows, he also abandons most of the pre-compositional strategies that could be extracted from them, using the system merely as a guidepost, freely interchanging structured and non-structured moments, as we shall examine. This thesis is supported by a statement that Berio wrote in his journal *Incontri Musicali*. In his article entitled "Aspects of Formal Craft," Berio, while discussing *Allelujah I*, explained:

> Nothing, in fact, could have hindered me from reconstructing the groups on the basis of a 12 note-series, after permutating and transposing its members. What interested me was the suggestion of a formal derivation from the "destruction" of that initial material and, on the other hand, to discover which material would have satisfied those suggestions, surpassing the idea of interval series and range.[69]

I have examined several of Berio's works from the 1950s and concluded that serialism was invariably a point of departure, where forms of the row appear throughout these compositions always yielding some type of serial transformation. Berio had already used stricter serialism in his early compositions, including *Chamber Music* (1953), *Cinque Variazioni* (1953) and *Nones* (1953-4).[70]

[67] Bryan R. Simms, *Music of the Twentieth Century: Style and Structure* (New York: Schirmer Books, 1986), 185; Berio had already raised similar arguments in a public letter written to *The Nation* in response of an article written by Benjamin Boretz in 1967. [Letter housed at the Paul Sacher Foundation, PSS: 252.1 0794 of February 10, 1967.]

[68] Unidentified and undated text. Housed at the Paul Sacher Foundation, Berio collection.

[69] Berio, Luciano, *Incontri Musicali: quaderni internazionali di musica contenporanea diretti da Luciano Berio*, Nos. 1-4 (Milan: Edizioni Suvini Zerboni, 1956), 62.

[70] By transformations, I mean P, R, I, and RI.

In the 1950s, Berio still held an organic conception of the compositional process, which was accomplished through serialism, as we can perceive from this statement:

> However, if from one side it leads me to choose an initial material (that was considered the matrix for the whole piece) where the occasional simplicity of relations of pitches agreed with a further timbral variation (namely, beyond the intrinsic possibility of articulation and transposition) and as much as possible opposite to a soloistic and unambiguous conception of the traditional instrumental groups.[71]

Berio purposefully denies the consequences of the choices a twelve-tone matrix allows in order to provide the listener the possibility of completing the work. He wrote:

> I desire to give each aspect of the composition a possibility of "misunderstanding" and a multiplicity of resolutions that regarded not only the resonant and structural aspects of the work but also those extremely practical and functional [aspects] that respect the habits of the listener; to give the listener an active role in the realization of the work.[72]

I would like to discuss four general uses of serialism employed by Berio. They are: 1) Pitch repetition or omission; 2) permutation; 3) series as a form generator; and 4) series as a unifying factor among different sonorous groups.

The first consideration is to accept that pitch repetition or omission within an ordered series was a non-issue. For example, I call the series that appears at the first phrase of *Sequenza I* for solo flute a 12-note series (not 21). The reason is that the manipulation of the series is not produced out of a 21-note series; actually, that particular ordering does not appear intact again in the work. What appears is a 12-note series *once the pitch repetitions are eliminated.*[73] The same idea seems to be true for series with fewer than 12 notes. If a series appears incomplete, as for example in *Différences* for five instruments, this is only a surface detail as transformations of the ordered series appear with more or less than 12 notes later in the piece. Therefore, a series

[71] Berio 1956, 57.

[72] Ibid., 65.

[73] We may also find similar practices elsewhere, as for example in Dallapiccola, *Quaderno*, 4th movement ("Linee") and Babbitt's *Semi-Simple Variations*.

with more or less than twelve notes is a *de facto* category in my listing: for Berio this type of practice is almost an irrelevant and/or routine approach to the system.[74] The fact that Berio omits and repeats notes of his original series is an interesting case of study, since sometimes the omitted notes are decided without a system (as in the case of the *Sequenza* I) and sometimes with a system, as it is the case with *Différences for 5 Instruments and Magnetic Tape* (1959). The example below is a transcription of one of the sketches of *Différences*.[75] *Différences* is scored for flute, clarinet, viola, cello, harp and magnetic tape. In the sketch, Berio writes the 12-note series first, then transposes by T_2 and notates even transpositions of the original row, indicating in parenthesis the notes that are going to be omitted. He also notates the resultant vertical sonorities that are the result of overlapping row forms. The omission of notes begins gradually, but increases to 50% by the eighth time the original form is transposed. The omissions are decided by the transposition of the forms of the row by T_2 and by rotating one note to the right: the overlapped pitch classes that result in a unison with the immediate note from the form above is therefore omitted. In consequence, a resultant harmony is formed (showed as the last line of the sketch). The resultant harmonies are a causality of the omission of notes; therefore, the omission of notes are structural. See Example 1.

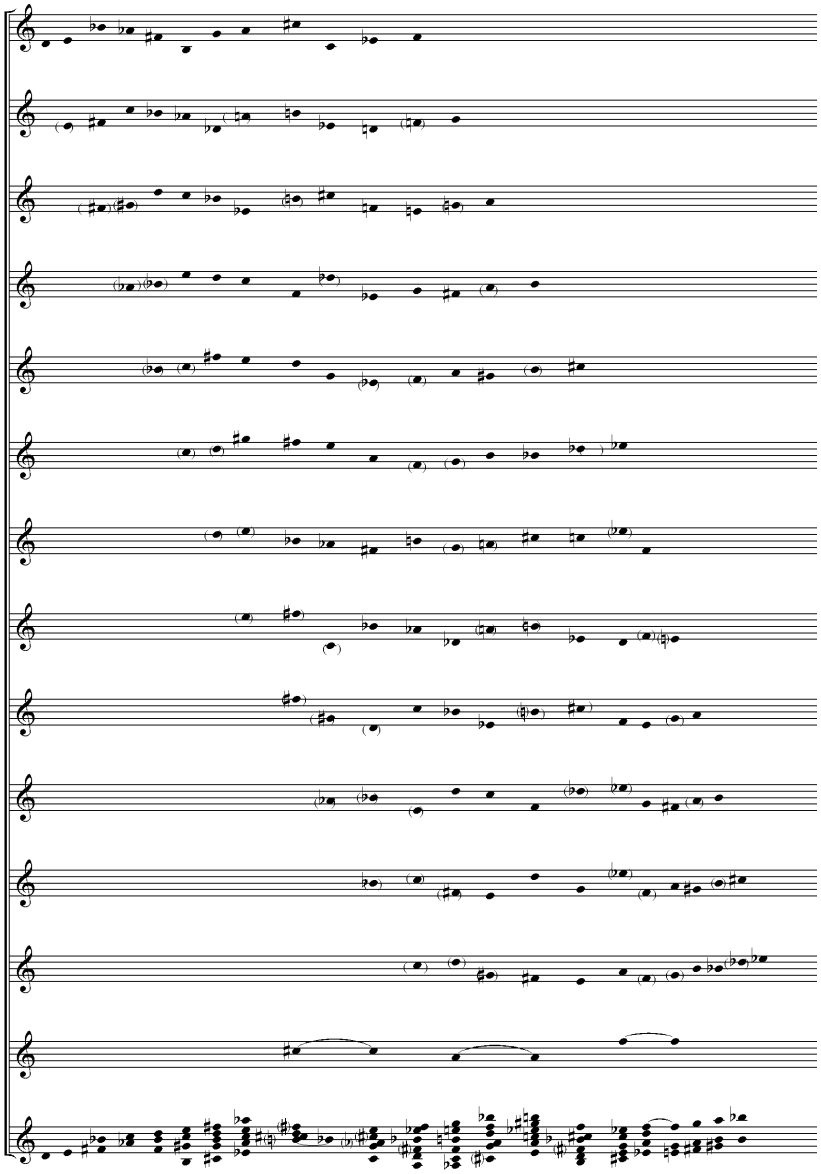
Ali Momeni comments on the construction of this row as: "While the scheme for the evolution of the pitch row is enacted quite strictly, Berio practices much greater freedom in the way each statement of the row is made. Statements are variably elongated by trills between adjacent diads [sic] in the row."[76] The series is shortened or lengthened (through pitch repetition), having as a starting point (at least in conception) the 12 pitch-class universe.

[74] I examined *Sequenza I* in detail in my 2007 article.

[75] The sketch is housed at the Paul Sacher Stiftung PSS:143-0609. Used by permission. The transcription of the excerpt is mine.

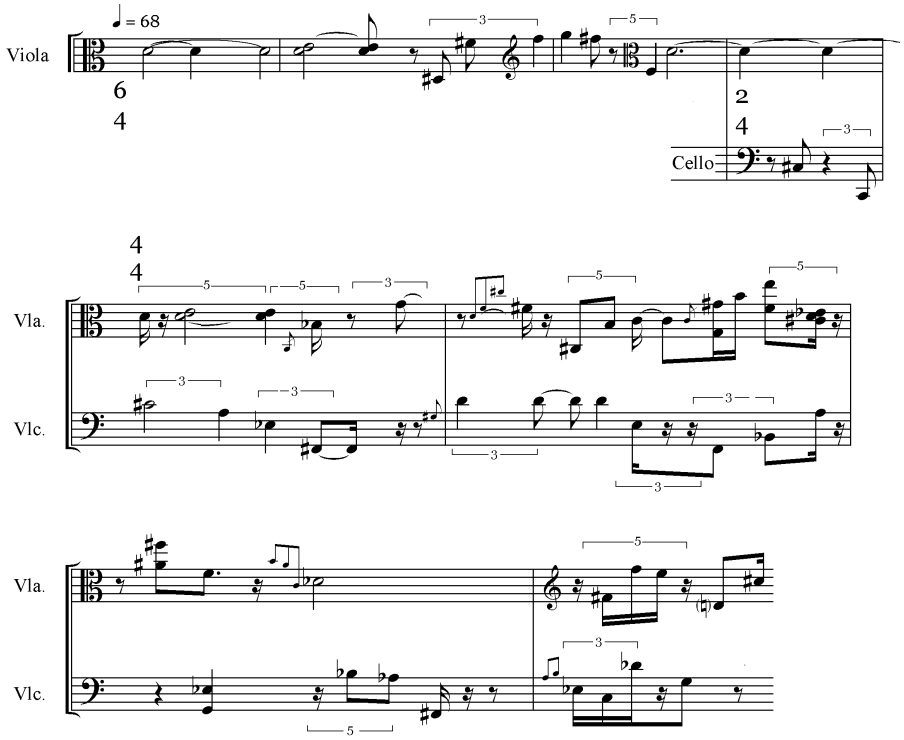
[76] Ali Momeni, *Analysis of Luciano Berio's Points on a Curve to Find* (2002), http://www.alimomeni.com/node/101 (Accessed 9/15/2009), 4; Momeni seems surprised to have found serial traces in a work such as this. At the end of his analysis, he comments: "The propensity for working with ordered sets of numbers and transformational processes is prhaps [sic] a habit left over from Berio's serialist days." (Momeni 2002, 17).

Example 1. *Différences*. Sketch. Transcription of a sketch archived at the Paul Sacher Stiftung, Basel. Used by permission.



The beginning of *Différences* is shown below in Example 2. The initial row presented by the viola has only 8 distinct pitch classes: 2 4 3 6 5 7 (6) 5 2. Because of the repeated notes that create melodic contours, a casual and immediate assumption that this piece is serial is unlikely. Although the order series that appears in the sketch is not reproduced in the score (which an excerpt appears below), we may note the following commonalities between the sketch and the score: 1) the row in the sketch has a high whole-tone dyad content: [24], [T8], [79], [35] all adjacent whole-tone dyads. The score, instead, shows the viola entry with the following pitch classes: 2 4 3 6 5 7, having 2 out of the 3 dyads as whole-tone: [02] and [57]. The dyad pair [02] is a prominent feature in the score, as it appears with the viola entry twice (mm. 1-2 and 4-5) and in the cello line (m. 6); this dyad also signals a new entry that belongs to the constellation of row forms that relate to the opening theme of the viola. The segment [2436] that appears first with the viola, appears also between viola and cello in m. 5. Fragments of the row from the sketch are also present, particularly when combining the viola and cello lines, as with the sequence of pitch classes in m. 4.

Example 2. *Différences* for 5 Instruments and Magnetic Tape. Transcription of the score archived at the Paul Sacher Stiftung, Basel. Used by permission.



Différences mixes acoustic and electronic sounds, a topic that Berio addressed in a 1956 lecture in Darmstadt. He used a pre-recorded sound of the same mixed ensemble to produce the material contained in the magnetic tape. The result is a combination of distinguishable pitch sounds produced by the electronic tape that combines with the music being produced by the live ensemble. The electronic tape begins as if a second ensemble is performing simultaneously with the live ensemble.

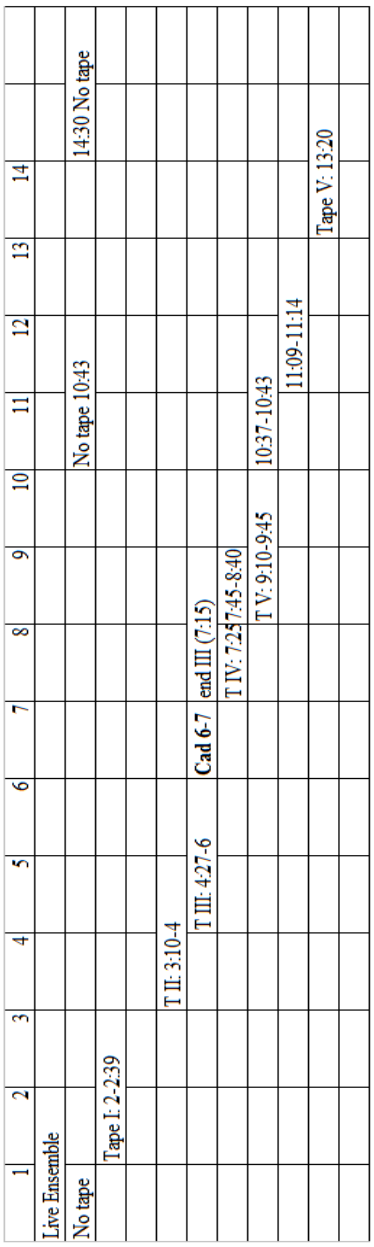
However, gradually the sounds produced by the tape are manipulated in such a way that in the middle of the piece, the pitches are distorted to produce only electronic sounds. All the material for the tape is derived from the group itself. There is no indication of how the tape was made; however, the content of the pre-recorded sounds is similar to the music performed by the live ensemble. The tapes were made by a pre-recorded version of the music he had already written for the live ensemble, electronically manipulated to reach a climax in the middle of the work. The two cadenzas are made exclusively by electronically manipulated sounds that are not pitch specific.

The piece is about 14' ½ minutes in length and a graph of the movement is shown in Example 3. The piece is a quasi-palindrome, beginning and ending with the live ensemble as if the live ensemble is the supporting sound (the accompaniment) and not the main line of the piece. We can find vestiges of twelve-tone practice applied to both the electronic sounds and the live ensemble music. It is interesting how Berio carefully crafts his pitch material, only to discard it for a freer manipulation of his sonorous object, as he himself calls it. One property of this particular row is that P_x is combinatorial at I_{x+5}; This alone is not necessarily unusual; the first hexachords of each pair (P_x and I_{x+5}) are not only combinatorial, but also a retrograde of one another. These properties allow the entire upper left quadrant of a 12x12 matrix to be invariant (which really is unnecessary, since Berio is not adhering to a strict use of the system, as we have discussed). We can find these properties of the twelve-tone series in Examples 3 and 4 (a and b).

The second category is permutation, which again is a *de facto* category as much as the first one is (note repetition). The series, when used, will include either note repetition or alteration of the pitch class order by the use of permutation, or both; however, Berio's use of permutation is non-systematic. The example below belongs to one of the sketches of *Points on The Curve to Find…* for piano and 23 instruments (1974). The main material of the work is a 10-note row, where the order of entries are rotated and a few pitches are permutated. The row is given as "line a" shown in the sketch and the transformations appear in the sketch's fourth line as letters b, c, d, e, and f. The original order 2 1 5 0 6 8 9 E 3 4 never appears the same. PC 7 and

T are introduced in order C (5 0 6 8 9 E 3 4 T 7) as they are exchanged with 2 and 1. See Example 5 (p. 100).

Example 3. Graph of *Différences*.



Example 4. a. Properties of the Row.

$H_1 (P_0)$ = 0 2 1 4 3 5 $H_2 (RI_5)$ = 5 3 4 1 2 0

$H_1 (P_1)$ = 1 3 2 5 4 6 $H_2 (RI_6)$ = 6 4 5 2 3 1

$H_1 (P_2)$ = 2 4 3 6 5 7 $H_2 (RI_7)$ = 7 5 6 3 4 2

Etc.

b. First Upper Left Part of the Row-Table belonging *Différences*

					→	↑
2	4	3	6	5		7
0	2	1	4	3		5
1	3	2	5	4		6
10	0	11	2	1		3
11	1	0	3	2		4
9	11	10	1	0		2

The third category is series as a form generator. In this case, the reappearance of the series signals some type of formal arrangement. This is clearly seen in *Sequenza I*. Although the series in *Sequenza I* never appears exactly the same way, pitch similarities among statements of the row allow the recognition of a memorable pattern. For Berio, pitch order is retained in part, modified by the addition of pitches, deletion, pitch repetition, permutation, etc. Pitch and intervals of the resulting series are not identical to the original series and as a result, we have a constellation of series that can be related to the original by *approximation*, as if the series would be some kind of grid that holds the work together.[77] Taking the repeated notes out, we have the following sequence of notes for the first phrase:

1) A G# G F# F E <9,8,7,6,5,4> = [012345] 0.000 0.000 0.092 0.092

2) A G# G F F# E <9,8,7,5,6,4> = [012345] 0.000 0.000 0.092 0.092

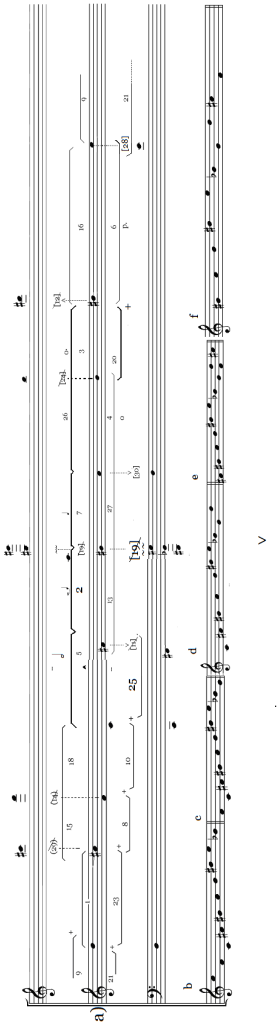
3) A G# G F# F <9,8,7,6,5> = [01234] 0.092 0.092 0.000 0.000

4) A G# G F# F <9,8,7,6,5> = [01234] 0.092 0.092 0.000 0.000

[77] For similarity measures, I have used Michael Buchler's *Set Maker*. http://mailer.fsu.edu/~mbuchler/setmaker.html, Accessed October 7, 2007.

P_9 entries one and two have one pair out of order and the next two entries repeat either the first or the second entry. What takes place is an interpolation of one note within the pre-ordered series.[78]

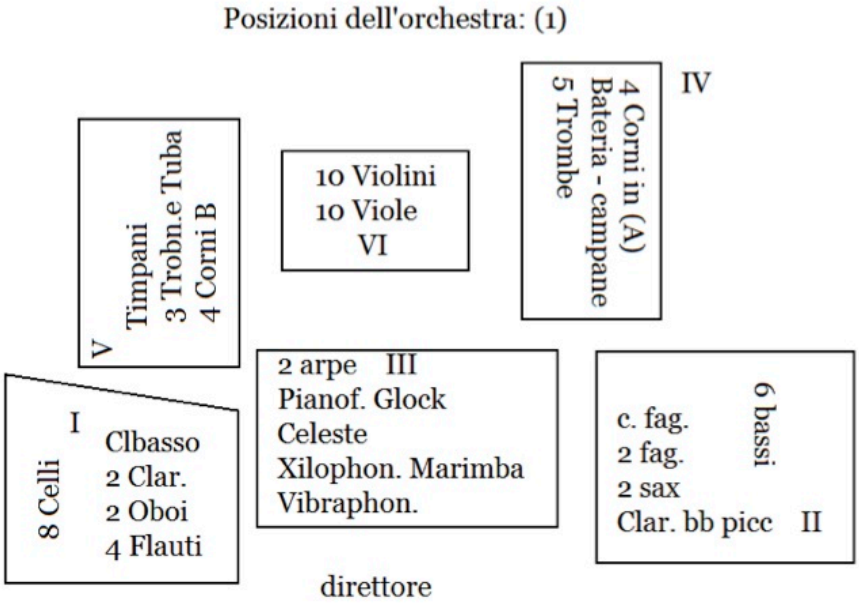
Example 5. Point on the Curve to Find… Sketch. Transcription of a sketch archived at the Paul Sacher Stiftung, Basel. Used by permission.



[78] Similar procedures can also be found in *Sequenza V* (for trombone, 1966), where a vestige of serial practice is manifested by reiterations of pitches, which eventually form a 12-tone row. The smaller sets are subsets of the larger sets.

The fourth category is series used as a unifying factor by one sonorous group, while other groups only impart some aspects of the original series. *Allelujah I* is an example of such usage. This orchestral composition was written in 1956 and it is scored for large orchestra divided into smaller chamber groups playing together at certain moments.[79] In *Allelujah I,* the orchestral medium is divided into six instrumental groups. The constant modifications of sonorous material produced by the different groups at different times create a spatial distribution of the overall sound, as if it were an electronic piece. Example 6 shows the sketch of the six orchestral subdivisions, as devised by Berio himself. The differences in register, timbre, and articulation give each group a particular resonant quality.

Example 6: Six Orchestral Zones of *Allelujah.* Transcription of a sketch archived at the Paul Sacher Stiftung, Basel. Used by permission.

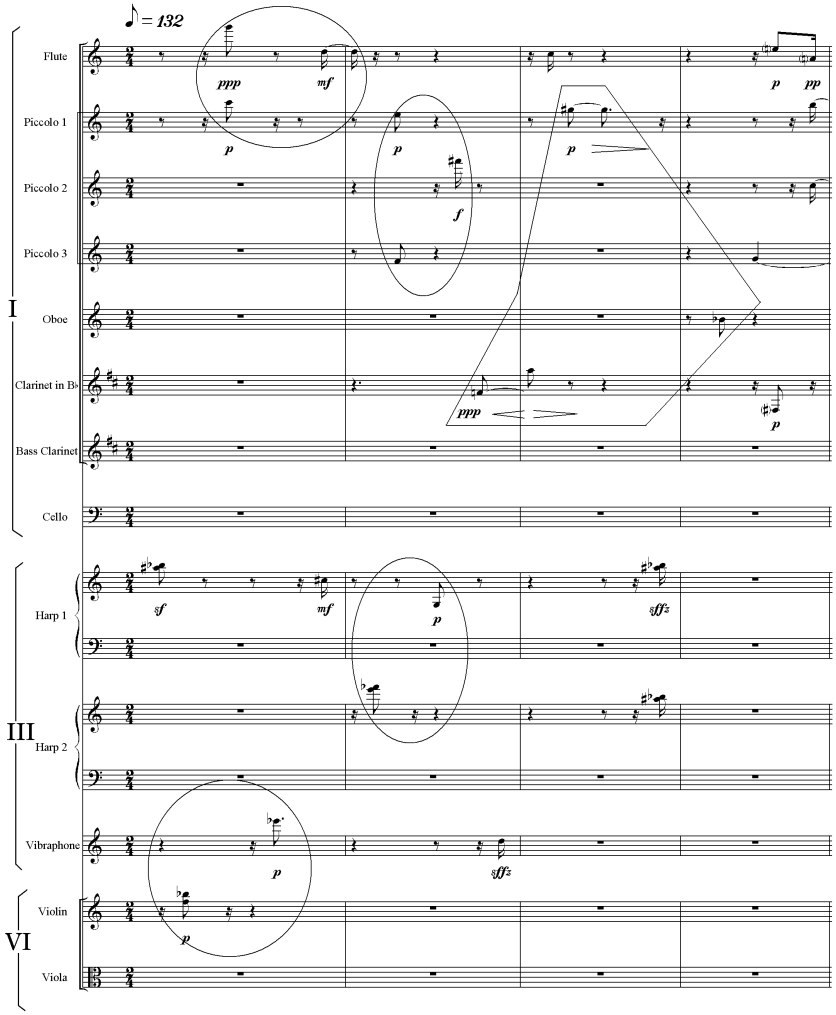


We have already read in the quote from *Incontri Musicali* mentioned above, that *permutation* is one type of manipulation he is employing. This is not a small issue and not the only one, since it suggests an intentional alteration of the ordering of the

[79] The name of this work provokes some pause for thought: it is a combination of two languages, Greek and Hebrew, where the first half of the word is spelled in Greek and the ending in Hebrew.

initial material. Berio tells us about "a destruction of the original material" without explaining how this was done. If we consider the initial row of *Allelujah* to appear in group I, as this is the group that is playing constantly throughout the composition, then we obtain the following ordered pitch collection: 7 0 2 4 5 6 9 8 T E 3 1. This row displays an interesting property: it is trichordal invariant at any $P_x - I_x$ level. For example: P_7 = 702 456 98T E31 and I_7 = 720 T98 564 3E1.

Example 7. Opening of *Allelujah*. Transcription of a sketch archived at the Paul Sacher Stiftung, Basel. Used by permission.



Example 7 shows the opening of *Allelujah I*. If we compare the initial measures of *Allelujah I* with the row, we perceive a spatial distribution of pitches and a recurrence of the initial row at the two transpositional levels P_7 and P_5. P_5 appears in this order <5 T 3 (1) 4 7> replacing the literal transposition of H_1 (P_5) <5 T 0 2 3 4 7>. In this case, 5 and T are in order, the middle pitches are skipped (02) and replaced by (1), having 3 4 7 in their original order. Although the similarities among sets are apparent, they can be best represented mathematically, using a comparison matrix:

	1	2
1. [013457]	0.000	0.187
2. [0123457]	0.187	0.000

Berio does not lock himself into a strict practice of serialism, but that does not imply that it was not an important tool for him. The importance of the system is to provide a background structure to the work. The difficulty lies in the fact that the transformational processes are sometimes systematically carried out, as with the choice of row, forms of the row, and literal repetition of pitches, and sometimes arbitrarily done, by adding pitches to or filtering pitches from the already established series.

Berio used a complex compositional system where it is difficult to detect structure just by looking at a published or performing score. However, we are now in a new era of the study of his works since his sketches recently became available at the Paul Sacher Foundation. Through the study of these sketches, we can perceive the evolution of the compositional process. It is now possible to compare the first sketches of a work, where structural arrangements are clearly worked out, with several later sketches, where structural procedures are no longer visible.

Berio stated that his approach to structure was not the result of a crisis or an incapacity on the part of the composer. Instead, he affirmed, "there is no musical crisis and it is doubtful if ever one existed. There are only works that are or are not significant and persons who are more or less capable of their assimilation" (Berio 1956, 56). Berio's practices of serialism exemplifies first that the system was not monolithic; second, using the system meant manipulating the system because no strict adhesion was required; and third, none of these practices were considered aberrations, as some of them had already been practiced (although less boldly) by the first generation of serialists. What is important to rescue from this observation is that serialism was like a magnetic and invisible field that composers of the post-war had to confront by either embracing or rejecting it. Embracing serialism meant using it as much as was convenient or desirable to each individual composer.

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